Mr. Richard Smith's

Oral History

Kennedy Space Center

Held on June 27, 2001

Interviewers: Dr. Roger Launius,

Dr. Henry Dethloff,

Dr. Lee Snaples

Transcriptionist: Sharon Youngquist

Roger Launius: OK, I'm Roger Launius. It's the 27th of June 2001. We're at the Kennedy Space Center and we're involved in the KSC Oral History Project. We're interviewing this morning Richard Smith, a Center Director in the 1970's and 80's. With me at the table in addition to Richard Smith is Lee Snaples and Henry Dethloff. And we'll begin, thank you first off sir, for…

Richard Smith: My pleasure.

Launius: …your willingness to participate in this. What we'd like to do is talk for the next couple of hours on your career and your reflections on the history of NASA. And I guess we should probably begin at the beginning and ask you a little bit about your background. Where and when you were born, where you grew up, something about your parents, what'd they do, how'd you get interested in, in aeronautics and space, things of this nature. OK.

Smith: Well, you want to start with my name and all of that stuff.

Launius: That's fine. Yes.

Smith: I'm Richard G. Smith, better known as Dick to most people. Born in October 22, '29. Currently are living in Decatur, Alabama at 3734 Chula Vista Drive, Southwest.

Launius: Wow.

Smith: Phone number up there is (256) 301-9461. And yes, I do have an email address it's rsmith3734@charter.net.

Launius: OK. Where were you born?

Smith: Born in Durham, North Carolina.

Launius: OK.

Smith: An old Tar Heel.

Launius: All right. And that's where you grew up I guess.

Smith: No, no. I grew up all over the south.

Launius: OK.

Smith: My dad was with the Western Electric Company as an installer. And after he was laid off during the depression and went back to work we lived all over the south. In fact in the third grade I went to six schools in three states. So … and as a result of it I have a good excuse for why I don't like to write.

Launius: OK.

Smith: That was when they were teaching penmanship and every time I changed schools they changed it and … I have never liked to put pencil to paper to write.

{laughter}

Launius: Fair enough.

Smith: That's my excuse. It may not be a decent reason, but it's my excuse.

Launius: Where, when did you as a boy, were you interested in aeronautics and space at all?

Smith: Oh, didn't know what space was. Aeronautics, yes, was always an airplane buff. But when I went to school I studied electrical engineering. I studied power. And have never practiced it. So…and I got into the space business by pure accident. I had … this was back during the Korean effort in '51 and I had already received a pre-induction physical and my greetings from my friends and neighbors and a nine month deferment in induction. So as I started interviewing for jobs as I, as I was getting out of school, most of them were out of state, someplace else. And I came home on Easter, was living in Decatur at the time, and someone said they're hiring over at the Arsenal, so on the spur of the moment, one Saturday morning I went over there

and interviewed and ended up taking a job and I said, “well, why don’t I just take a job at home, because in two or three months I’m going to be drafted anyway.” And that way, not moving and everything and of course with the government the pay was less. But that wasn’t my prime concern, so I took the job and two days after I graduated I went to work over at the Redstone, for the Army. And about a month later the General’s office called and says, “we’d like to put you in for an occupational deferment.” I said, “What’s an occupational deferment?” and they did and as a result I never went into the service and stayed in the missile and space business all of my life. So I got there by accident.

Launius: I see, I see.

Launius: Going back a little bit, you went to Auburn.

Smith: Right.

Launius: There’s a serious Auburn connection in NASA and obviously there wasn’t at that time because NASA didn’t even exist. But was there a big and you said you weren’t trained in aeronautical engineering.

Smith: No.

Launius: Was there an aeronautical engineering function there? Were they turning out engineers working in that field?

Smith: You know, very frankly I don't remember.

Launius: OK.

Smith: It seems like there was a course in aviation, but I was not familiar with it, didn't touch it at all. So I don't really remember.

Launius: Um-huh. OK. All right. Just curious because of this very long-standing, very deep tradition with Auburn.

Smith: Yeah. Well you know it was interesting. Like I said, I studied power. My dad was an old telephone guy. A freaky situation, I was like 5 hours or better of graduating in 11 quarters. And there was one course in telephone engineering, which was really relay systems back in those days, I wanted to take and that was in the spring quarter. So I ended up going the 12 quarters and taking that course. Now when I got into the missile work that was the only course I ever used other than basic engineering, in my work with the weapons system.

Henry Dethloff: Could you describe your impressions and the situation when you walked into your first job at the Redstone Arsenal and your contacts with the German contingency there, and maybe von Braun, Debus, or whomever.

Smith: Well, it turned out that the first person I met when I went to interview was Kurt Debus.

Dethloff: Ok.

Smith: And he sent me down to a gentleman by the name of Dieter Grau working in the electrical systems and power area and I talked to Dieter and ended up accepting the job. And when I went to work I worked in Dieter's group, but I worked for a gentleman by the name of Hans Fichtner and he was head of the electrical systems design for the vehicle and he had a counterpart Fred Duer who headed the ground equipment. And I was the first employee that worked under Hans so he and I became very close over the years and he was my supervisor for my first 15 years.

Dethloff: I bet that was a learning experience.

Smith: A tremendous learning experience and I'd like to say something about Hans that I think is good. I've often said as I got older and looked back, one of the most important people in your life is your first real supervisor and it's somebody really you have very little choice over. I mean, if you're lucky and get a good one you're ahead and if you got a bad one you're really put behind for a time. And Hans I was very lucky with. I'd been working with him a week or so and he sat me down one day and says, "Look," he says, "when I give you a job I don't want to discuss how you're going to do it." He said, "I want you to take the initiative and go do it yourself. Any questions, you come

back." And I've often put that into terms, "if you give a person enough rope to hang themselves, most of the time they don't." And I've tried throughout my life to make that my philosophy, is to give people, tell them what you want, give them the authority, the leeway to do it, and if they don't do it the way like you as long as it works its ok. So I was very lucky in that respect.

Lee Snaples: Was it unusual in anyway to, having come through World War II so recently, to be working so closely with Germans?

Smith: Yeah it was. And at that time they were very hard to understand. Their accent was quite heavy. Remember they'd been here for several years but they'd been basically secluded out at Fort Bliss.

Snaples: Right.

Smith: And so they had not really lived in the community at all and when they moved to Huntsville that was the first that they were really out in the community. I've often joked that I've learned to listen with a German accent. And that's probably more truth to that than not. I did not know any German. My boss Hans, I never pronounced his name the way that he did. But he never pronounced Smith the way I did either…

{laughter}

Smith: So we got along just fine so. And you mentioned Wernher, von Braun. I met him several times in my younger years and he was a. . . a most unusual person. He was…he was the best leader that I ever knew…he inspired people to do things. He didn't mind if you made a mistake. The way you got in trouble was if you tried to get smart and cute and cover up things you were in trouble. He had a fantastic memory for names. He met my wife at a function and the next time he saw her was two years later and he called her Louise. And I don't possess that talent. An interesting thing about him is that …he's been…in my opinion, he's been given credit for technical capabilities above and beyond what he had. And I'm not saying that as a negative thing, but he was…he was the best person I've ever seen in being able to read a person. If you are making a presentation he would sense your weak spots. And he'd ask a few leading questions and the first thing you know you were laying your heart out on the table and there it was. And he got an insight, you know, a reputation for a technical insight, that really wasn't a technical insight, it was a people insight. And that was one of his great strengths, but he didn't belittle you in doing that. I mean, unless you got cute with him…

Snaples: Right, right.

Smith: Then he'd eat you up.

{laughter}

Dethloff: Did you get assigned to the Redstone very quickly?

Smith: Yes. It was where I was working at the time.

Dethloff: Ok. Did you come with any of the development teams I think they were called down for the firing….early years.

Smith: No, let's see, I came down for the third launch was the first time I came down. And it blew up. It went up about ten feet and set right back down on the pad and blew up.

Dethloff: That was probably a learning experience.

Smith: Yes it was and I was on top of a building not too far away from there and I thought pieces were coming my way so…

Launius: Duck.

Smith: That's right.

{laughter}

Launius: Back to Wernher von Braun for just a moment. Everybody said he's a tremendous leader. Was he the kind of leader that was a kind of Vince Lombardi, you

know, rousing speaker, that sort of person, or was he more quiet and led in a different way.

Smith: I…I wouldn't put him in the Vince Lombardi category. He…and quiet wouldn't be the right word either.

{laughter}

Launius: OK.

Smith: He was…he was a visionary in what he wanted to do. And his way inspired people to really get on the bandwagon and the team. And in those early days, it was a small organization. We basically knew each other and what developed over the next couple of years is kind of, let me say an informal organization that…and this was primarily…the…non-German group, that were the, kind of the first people like myself working with those. But then, developing the electrical system and doing all the wiring in the vehicle and everything, we had to contact everybody that had anything on it. And if it had a wire going to it we had to know what it was and how to wire it up and everything. And, so an informal organization, we didn't have a quote "a formal change control system", or anything like that. That was us. That group. The vehicle being on the pad. If I'd picked up the telephone and at this time I was probably a GS-7 or 9 or something like that, and I called my counterpart down here in Florida, …and let's say it was on the pad and tomorrow was launch…and I said "we got to put a change in."

There was no questions asked. OK. They knew that I had the authority to speak for that and it was done and, and, you didn't use that authority frivolously.

Launius: Sure.

Smith: But, that was the way it worked. In fact one time I remember a guy that was the head of the labs at the time, Walter Haussermann, he called me in and we had been flying an angle of attack meter, just as instrumentation, and they decided that they wanted to make it active. And they wanted to know how big a job it was to do it. And I said, "It's a simple change to wire it in, no problem." I said, "Now you want one put in pitch or yaw, or just put it in one axis?" And he told me and … now he says, "I've talked to Kurt Debus", Kurt being the head of the launch operations, he said, "I'm going to get this change to him. We're going to expedite to put in." Well I tried to tell him that I really didn't need that help, that I had my methods of getting that done because we did it every day. But it was obviously not the place. So I went back and, 15 minutes later I was back in his office, and it was a simple change order and I had written it up and I gave it to him. Went back to the office, picked up the phone, called my counterpart down here in Florida, said, "Hey, we need to make this change. OK." Well several days later Kurt Debus handed the change to the same guy I was talking to and he told him, he said "It's already installed and checked out." And a couple of days after that Haussermann called me again and said, he said, "Dick, we've decided that we want to put it in yaw [not] pitch. How big a change is it?". And I says "Well…", I was suspicious this might happen so I fixed it up where this is a very simple change, OK. He said, "Well

get the paperwork". I said, "Well, let me tell you", I said, "The change was in and checked out two days before the paperwork got from Debus." And he said, "In other words, tell you want I want, leave you alone." And I said, "Yes, sir."

{laughter}

Launius: You're describing a very informal system.

Smith: Yeah, but it was a very tight system.

Launius: Yeah.

Smith: It was not, it was not a loose system, but it was a very tight system. OK.

Launius: Yes … and it squares very nicely with what I've heard in other instances. Where one of the things, one of the key components of the von Braun team was the ability and the willingness to trust each other and the desire and the willingness and the necessity to communicate with each other very closely.

Smith: Right.

Launius: And that seems to have been the key to successful management.

Smith: But of course, as the organization grew larger and the system grew more complex, change control became a necessity. The first time I appeared before a change board was when the, we were working over on Jupiter, and it was developed under the Army and was being assigned to the Air Force, and the Air Force came in and set up a change board. And that was the first time I ever heard of a change board, so…

{laughter}

Launius: Well that's, that's an Air Force thing. Was it hard to get used to this? I mean, were there lots of bumps on the road?

Smith: Yeah, it was…and the downside of it is…it has deteriorated the people's sense of responsibility. OK. And people tell you "Hey, it's not as much fun as it used to be," in a lot of cases. And I think what it is, is the fact that the people don't have the same sense of responsibility they had back then.

Launius: So it's done more by rote than by. . . Yeah.

Smith: Telecons and meetings and all the other stuff. We were, at the time, we were small enough we didn't have to have that.

Launius: And that squares very well with what I've heard from other people, too.

Snaples: Can, can I ask a question, real quick?

Launius: Sure.

Snaples: Because it's a subject of interest to me. Is part of that maybe that the people today are more interested in not making mistakes or not being blamed for mistakes or maybe that they're held more accountable than von Braun used to?

Smith: I think there's a lot of truth to that, but one thing that's wrong in your statement is, not held accountable, because we were truly held accountable. OK? That was never the question. There is a much greater fear of a mistake today. Mistakes are not…tolerated. They were never "accepted", but they weren't punished if it was an honest mistake. OK? And now it's…you know the whole society, we want a risk-free society. And we spend, in my opinion, an inordinate amount of money and effort to get the one hundredth of one percent out of it at the end, OK? Where I think that if you really designated individuals that were responsible and they knew they were accountable, you'd get the same thing with much less effort.

Launius: So risk aversion is…

Smith: Yeah.

Launius: …something that I think has been growing.

Smith: Yeah. I can remember after the Challenger accident, I had retired, and I guess…Dick Truly was the administrator at the time and I was talking with Dick and I said, "My perception is that you guys are making a mistake. You're trying to eliminate every little risk." And I said "You can't do it, it's there." And I said, "I think you're making a mistake not, not saying, it's not going to be perfect. There are going to be risks." And he said, "Dick, I agree with you, but . . . the environment is such that if we talk about any risks, we've got to fix it. It's just not accepted." And it's still there…

Launius: Oh yeah.

Smith: You know, it's still there. There'll be another accident for some day, for some reason.

Launius: NASA will be grilled.

Smith: And . . . our whole culture has gotten that way. You know, all the lawsuits, and everything else. It's a cultural change the country has gone through and in my opinion it's not good.

Snaples: Yeah, yeah.

Launius: Going back to the…obviously we've got a brand new type of technology. We're working Redstone at the time.

Smith: Relays.

Launius: And there were enormous numbers of risks…

Smith: {laughter}

Launius: …and a lot of…

Smith: Right.

Launius: …failures….

Smith: Right.

Launius: …and I have the impression that von Braun and his team accepted that as the nature of things.

Smith: That's right.

Launius: We're building a system that's entirely new. We're plowing new ground. We will learn with experience. We'll make mistakes. They'll be honest mistakes. We won't make the same mistake twice, I think one of the things that he kept talking about.

And…is that a culture that sets itself up for good success rates? I think that it probably is.

Smith: Well, the difference today is, you've got technology and tools we didn't have then. We were really developing the systems empirically. Now, you've got all the computer modeling capabilities, so on like that. You can eliminate a lot of the failures we had earlier, that we just did not have the tools to do at that time. It was, for all intents, trial and error.

Launius: OK. 1957 the Soviets launched Sputnik I. What was the reaction down in Huntsville, about that?

Smith: Total disgust. Because we had a vehicle sitting in the barn for a year that could have done it.

Launius: That could have done it.

Smith: And wasn't allowed to launch it. OK?

{laughter}

Launius: That's right. Everybody. . .

Smith: And we all knew it, OK.

Launius: Everybody down there knew that you had the capability to beat them.

Smith: That's right and that we weren't allowed to do it. Yeah.

Launius: For political reasons.

Smith: For political reasons. It's kind of funny, you know. Like I said, when I first went to work it was a pretty small organization. We were in the guidance and control lab at the time and we used to have on Friday afternoon a meeting of basically all-hands and the meeting basically was somebody giving a lecture of some part of rocketry or whatever and I remember one day, I forgot who did it, was giving a talk on putting up a satellite and I thought that was the most absurd sounding thing I'd ever heard in my life. I just kind of sat back and almost snickered under my breath, you know, at that. And because it was just totally foreign to me at that time. And then a few years later we were doing it.

Snaples: What was absurd? You didn't think it was possible or didn't you think it was necessary?

Smith: I'd never thought about it. And I didn't know the physics and all behind it and everything. And, and it was just kind of beyond my imagination at that time.

Snaples: In going back to Sputnik. Let me run an idea by you if I could. If you had beaten the Russians into space do you think there would have been such an outcry in the United States to beat them to the moon?

Smith: Good question. I don't know.

Snaples: OK.

Smith: I don't know. In a lot a, in a lot a ways it was a blessing to have been embarrassed.

Launius: Right.

Smith: OK?

Snaples: Yeah. I was just wondering that.

Smith: So, I don't know hindsight, which way that would have gone.

Launius: Right.

Smith: But it could have been very well a detriment.

Launius: Yeah, Neil McElroy goes into see the President about four days after Sputnik, and he says, "The Soviets have done us a good turn here. They've energized people. They have pried the Congress loose and now we'll be able to do something." So maybe, it was a good thing.

Smith: Of course, during some of those years, being a part of the Army…and it was a terrific battle between the Army and Air Force about range…what was allowed. We were developing the Jupiter at this time. Air Force was doing the Thor.

Launius: Right.

Smith: Two competing vehicles. And of course the Army was taken out of that role. Limited to five hundred miles, or something like that.

Launius: Right.

Smith: And we turned that thing over the Air Force. Of course that was the kiss of death for that vehicle. No question about that. But then…NASA was created.

Launius: Right.

Smith: And basically the von Braun team became part of NASA a year later. And the year was to give time to split off and leave a core for the Army and we all knew that we were going to become a part of NASA.

Launius: So there was an acceptance…

Smith: Yeah.

Launius: . . . at the Arsenal that that was going to happen?

Smith: Yeah. And in fact you had, if you did nothing you became a part of NASA.

Launius: OK.

Smith: If you decided you wanted to stay with the Army and the weapons systems you had to take action to stay that.

Launius: OK.

Smith: So, and then they talked to everyone about whether they wanted to go or things like that. But it was a kind of an automatic transfer.

Dethloff: What was the sentiment about going to NASA? Did you see this as an opportunity?

Smith: Saw it as an opportunity, because I think…under Wernher's leadership and all we felt space was a more attractive thing versus weapons 'cause we'd all grown up on weapons with three weapons systems developed under our belt by this time, the Redstone, the Jupiter and the Pershing. But if you look, except for the Pershing, we spun both the Redstone and the Jupiter off into space vehicles.

Dethloff: Excuse me. Were you at the Explorer I launch? Did you participate in it?

Smith: No I was not at the launch. I was very active in the design, in the development of it. In fact one of my favorite stories occurred during that time. You know, sometimes you just happen to be at the right time at the right place. And we had a meeting on a Friday afternoon down at von Braun's conference room and everything and my boss, Han's, was out of town on vacation or something so, and I was the Rep down there for that. OK. And… we were developing the Jupiter C with the spinning cluster of the eleven 3-in-1 rockets and the thing. And the question was, how do we ignite, the…would be third stage, the three, and then the one. What kind of timing device do we use? And JPL was developing the Loki (rocket) there. And they were going to propose a pyrotechnic timing scheme which had a fair amount of inaccuracy to it. And, of course, the timing of those …had a very major impact on performance. If you could time it just right you get your performance much better. And I had had a

discussion with a friend of mine a week or so before. He was playing with a little dc motor put out by Globe, I remember that. And he said, "This thing has an amazing constant speed with voltage variations," and he said "I think it'd make a good timer." He was playing with this and as we talked that day…I said, this is an application for that timer. And talking and I said "I saw a device the other day that I think will work" and our meeting, it was a Friday afternoon, our meeting was Tuesday with JPL. And I said, "I'll have a design Tuesday to present" and nobody else had any ideas, so they said, "OK." So I stepped out of the room and called Roy, my friend, and I said, "Roy, meet me in the morning in my office at 8:00" And I said, "I think I've got an application for that timer." So we met the next morning and designed a timer, designed a battery pack to carry it and centered it in the middle of those three rockets, under the nozzle of the fourth one. The last command it gave was ignition of the fourth stage and then it got blown up, from its exhaust. And Monday we had a draftsman draw it up and I presented that on Tuesday with no review by anybody except Roy and I. And we flew that on every Jupiter C and Juno II system. And one of the Germans told me later, he said, "Dick, when you told us on Friday you'd have a design on Tuesday". He said, "I didn't think you could do it". I said, "Well, I just happened to be lucky. . .

{laughter}

Smith: . . . that I'd seen something. You know." And that's just one of those, you know, absolutely coincidences, out of the blue type of things. You know.

Launius: Were the folks down at, when you all moved over to NASA, were the folks, obviously, clearly NASA's going to have the human space flight mission. It's got the astronaut corp. that starts to come about. Was everybody excited about human space flight as opposed to robotics?

Smith: Oh yeah. They were. And of course that was a very interesting learning curve to do that.

Launius: Right.

Smith: I remember meeting the first seven. And as we got into Mercury and later on the Apollo and all. We weren't involved in Gemini. Coming out of the area I did, with electricity…we were the key interface as far as crew safety was concerned. Support systems and so forth. And I became the Marshall chairman of crew safety and so forth and…it was quite a learning experience for me to sit in meetings with the crew and spend all day long talking about how many ways they could get killed. OK? It took a while to get used to doing that, you know. And, and it was a great experience.

Launius: How did the, how'd the astronauts, I mean, they were obviously very matter of fact about this, but

Smith: No!

Launius: No?

Smith: No. Not matter of fact.

Launius: Really?

Smith: No, no. They were not matter of fact about it. They were…obviously risk takers or they wouldn't be in the business.

Launius: Right.

Smith: …They wanted everything reasonable to be done. And when they were satisfied that was the case they were willing to take the risk. OK? And they were heavily involved in that. Of course, we had specific individuals assigned to that thing and you got to know some of those guys very closely.

Launius: Right.

Smith: Because you were working with them every month, and so forth.

Launius: In terms of safety obviously there were abort systems and a thing on top that pulled them..

Smith: Yeah, the escape rocket.

Launius: … the escape rocket, and other things that were done to help ensure the safety of the crew. And then there was reliability that was worked on for the rocket itself.

Smith: Right.

Launius: How did you go about trying to take the Redstone, which was a military vehicle, and turning it into a launcher that would be acceptable for human flight?

Smith: As far as…redesigning the systems of the Redstone itself, very little.

Launius: OK.

Smith: What you added to that was a sensing system for abort purposes.

Launius: OK.

Smith: The Redstone at that time had the best reliability of any weapons system. So we did very little to that but we built an abort system too, because we didn't know what the crew could do. Houston didn't know what the crew could do. So on Redstone, it was basically an automatic system. The guy in the capsule had a chicken switch he

could throw. But he'd have to be damn fast because we were sensing most everything and we would have got him off before he could do it. And, we didn't know whether he would be capable of doing it anyway. And, we laid out a system and …like I say at this time we were using relays, because it was really all we had. And we designed a system of basically the abort system was a cold circuit type arrangement with a bunch of parallel inputs and you made a command, and did it that way. The General Dynamics people, or Convair, or whoever they were called at that time on the Atlas, had laid out a system that was basically a hot wire system with a whole bunch of series of contacts in it and you could break any contact and you would abort it. And, the first time I met Chris Kraft, he came to Huntsville, and he had just got back from being out with the Atlas people and had bought off on their design of this hot circuit. And we had it the other way around, and he told me we should change ours. Well, I had never seen Chris before. He had never seen me before. We squared off in a room just the two of us about two hours, and I mean we were hot and heavy all afternoon and got through I won. And he went back and changed the Atlas circuitry to the same we had on the Redstone, or similar to it I think. And that set the two of us off, really in a tremendous respect for each other, from right then and there, and that carried all the way through the rest of our careers of that. A funny story was, during the Apollo program we were designing that system, of course by this time now we knew what man could do and we were only putting in an abort, automatic abort in case there was not enough time for the crew to react. And, we had one circuit that we had wired up in a certain way. One of the members of the crew safety group from Houston said, "Dr. Kraft," Chris, had received an honorary degree in this period of time and he was known as doctor by then,

and he said, “Dr. Kraft thinks the logic should be this way, not that way,” and I said “Well, you go back and tell Chris that I don’t agree with him. That, if he’d like me to come down to Houston or if he’d like to come up here to Huntsville or let’s get on a telephone to discuss it, we’ll talk about it.” Never heard from him. Next month the same question. I said, “Have you told Chris what I said?” I said, “I’m very happy to talk to him.” And we never did change that circuit. The irony is he could probably have won that argument because it really was six of one half a dozen of the other between the two.

{laughter}

Smith: I couldn’t come up with any real plusses or minuses one way or the other. But we never did change it, OK?

Launius: All right. In spring or in May of 1961 Kennedy goes before the American public and Congress and announces we’re going to land on the moon by the end of the decade. What was the reaction in Huntsville? What was your reaction to that? That decision.

Smith: You know, I don’t remember. Probably was, “Oh heck, what are we going to do now,” you know, because let’s be honest, we didn’t have the technologies and all the tools to know how to do it at that time.

Launius: That was kind of the Bob Gilruth one, “Oh my gosh what am I in for.”

Smith: That’s right. We got it, now what are we going to do with it type thing. And, the other side of the coin of that little bit, is that being setting up as a national goal with a finite deadline…was one of the most enjoyable times anybody ever spent. Everybody was dedicated to get that job done no matter who you were working with, industry or other part of government and so forth…motivating people was not a problem and it was hell on wheels there for years to get that done.

Launius: Right.

Smith: But great fun. A unique time in history. It really was.

Launius: Yeah, I think you’re…lot’s of people have said that. Max Faget told me one time, he said, “You know, we were all young and we had the sense that we could do anything.”

Smith: And we didn’t know that we couldn’t so we went ahead and did it.

Launius: He said, if a President were to come forward and say that today assuming he would ever do that, and that’s problematic. He said, guys like me would stand, raise my hand and say, “Excuse me. We got all these problems that we have to deal with.” But nobody did that in those days.

Smith: No, and there's a lot of truth. I totally agree with what Max says there. I remember…sitting on a panel and, I guess, the discussion was, had to do with Space Station or something at this time. And …I ended up being the last speaker, and the last speaker in a panel and what you want to say has already been said by the time it gets to you. And, I said that, "You know what scares me the most in doing this is I look at this room here and I know about half the people out there." And I said, "You're all too old and you know too many problems and so forth and I'm not sure you've got the gung-ho we can do it attitude that we had going into the Apollo program." And, I think that there's a lot of truth to that.

Launius: Yeah. At some level it's a question of mindset.

Smith: That's right, that's right.

Launius: We can do this, we just have to sit down and do it. Figure out how to solve the problems.

Smith: No, is an unacceptable answer.

Launius: Yeah.

Smith: If it's no, why? What can you do to make it a yes? You know? And at the time…in some ways Apollo maybe had more money than it needed. It taught us a way

of doing business that as time became more austere was hard to change because a lot of times we would go off in three or four development paths at one time because we didn't know which one was going to come out. And on a tight budget situation you don't have that luxury. And, because…like I said we didn't have all the tools.

Dethloff: You become Saturn manager.

Smith: Yes, after Apollo 13.

Dethloff: Oh, OK.

Smith: After 13. After Apollo 11 there was a major shakeup in all organizations. We had a lot of people in industry that left and went back. We had Air Force people assigned to us that left and went back to the Air Force. So there was a major change. I had left the electrical systems design and became one of the first systems engineers at Marshall. And Wernher and Eberhard Rees asked me to go over and be deputy program manager for Saturn starting with Apollo 12.

Dethloff: But you had been with Apollo basically all the way…

Smith: All the way through.

Dethloff: …through.

Smith: All the way through, all the way through. I had been through the entire basic original design in the electrical systems area and then I moved into systems engineering. And, I guess I was the chief system engineer for the launch vehicle. And, so I went over as deputy program manager. We started working on…was it Space Station? No. We started working on Shuttle. Started working on Shuttle. And Roy Godfrey, who was the manager, they wanted to assign him as head of the Shuttle activities at Marshall. And so I moved up as Saturn program manager. Now if you look at the official records it says I became Saturn program manager with Apollo 15, in reality it was Apollo 14. 13 had a couple of troubles. As you know the oxygen tank in the command module, but we had pogo in the second stage, the S-II stage. Roy who had moved over and was spending full time on Shuttle, and Eberhard Rees who at this time was center director, I guess. I guess Wernher had been moved to Washington then.

Launius: Yeah about 1971.

Smith: About that time. And he was talking to Dale Myers who was the associate administrator for Manned Space Flight and he said, “Should we make a management change after 13, with these problems” and what would Dale say but probably no. But in reality Roy spent a hundred percent of time on Shuttle and for all practical purposes I was the program manager. In fact, Rocco Petrone who was by this time the head guy for Apollo in Washington, any of his calls came straight to me, it didn’t. . . it was just unofficially that’s the way it was.

Dethloff: What would have been your highlights in the Apollo, in your Apollo experience, before you became manager? Manager of Apollo 11?

Smith: Well, you know, obviously Apollo 11. But, I think … in one way the biggest highlight and it's one that…was the gutsiest decision was to put a man on the third Saturn V, that was Apollo what?

Snaples: Seven or eight.

Dethloff: Eight went to the moon.

Smith: Apollo 8.

Launius: Circum-lunar mission.

Smith: The first Saturn V flew…with very minor problems. Very clean. The second flight we had pogo in the first stage. We had an engine failure in the second stage and in shutting down the pre-valves to the engine to keep any propellants we had cross-wired the pre-valves and it had not been detected. And so we shut that engine down and shut another engine down so we had two engines out then. We were trying to start the third stage engine, the SIV B engine three times and it failed to start on the third start…the conical SLAW between the Saturn and the base of the service module, it was a honeycomb structure. It had moisture in it and almost collapsed. We had lots of

problems. And I can remember a meeting on a Sunday in Huntsville with all the brass from Houston and Washington and Marshall and the Cape and…the decision was, yeah we understood all these problems and we could fix them. And we would go ahead and put men on the third flight and not only that, we could send them all the way around the moon and back. And to me that was the most gutsy decision of any I had ever seen. And to me 8 stands out higher than 11 from that standpoint. So that was one of, in my opinion, the highlights of real drama that we had.

Launius: Can you say something about the all-up testing decision? There was, I think, some resistance at Marshall.

Smith: Yeah, Marshall was a very conservative organization and we had laid out the Saturn V development kind of like we had the 1-B, two or three shots of the first stage, and then fire off two stages and so forth. And, to shorten the whole thing, Dale Myers wanted to go all-up, and it was resisted by Werner and people like that. But the decision was made, let's go ahead and do it. And it was the right decision.

Launius: And in many respects I think it was a pragmatic one. They didn't think they could make the schedule.

Smith: They couldn't have made the schedule. I don't think there's any question about it.

Launius: Yeah.

Smith: Because that would have perhaps delayed the Apollo fire and the time it took to, to recoup from that and would have probably blown the decade.

Launius: Can we talk for a second about the Apollo fire?

Smith: OK.

Launius: Where were you when you first heard about it and what was your reaction?

Smith: I know exactly where I was. I was on NASA 3 flying from LA back to Huntsville. We had been out there and we had had an engine blow up on the test stand at the Sacramento for the S-IVB and I had taken the crew safety people out there and we were looking at that to see what effect that would have on the crew safety aspect of it. We had flown from Sacramento down to LA and picked up some other people and were flying back and the crew picked it up on the radio, and needless to say it was a very quiet trip the rest of the way back. I didn't know what effect that would have on it at that time, but from my personal involvement I really was not involved in too much in the aftermath of what happened to the command module and so forth. They did take Eberhard Rees, who was Wernher's deputy and they assigned him out at Downey with North American at that time, Rockwell, to oversee the rework of the command module.

Because he's a stickler for reliability and things like that and so, he served in that capacity for however long it took, a year or two.

Launius: OK. About five minutes? OK. I'll just do one more question. Lot's of people have talked about, and they put it in the context of essentially hearing the clock ticking, that we've got to land by the end of the decade, that's the mandate. That there was an enormous amount of pressure to work long hours, an enormous amount of pressure on individuals too, to do their jobs and do them well and their personal lives suffered and sometimes their health suffered, a variety of things. Was that the situation in Huntsville as well.

Smith: Too busy to think about it.

{laughter}

Launius: OK. I think you just confirmed it.

{laughter}

Smith: Literally we were having too much fun, to be honest about it.

Launius: And that's something else that they've all said, Max Faget, Tom Kelly, you know, lot's of people have said, "Oh yeah, we worked long hours. We worked on

weekends. We worked at night, we worked, you know, two, three, fours days in a row without going home and there was nothing better that I could think of to do. I mean it was the greatest thing in the world."

Smith: Well, I can remember when we were going down the first countdown demonstration test for 501 here at the Cape. Up at Huntsville we had…I think HOSC, Huntsville Operations Test Center, Support Center, where we monitored telemetry and so forth coming from the vehicle and were in constant telephone conversations with Florida and everything working in synch. And we spent a week getting that dern test off and I forgot how many hours I put in that week, but, you know, it was dang near around the clock. And, and we got that under our belt. And I remember when we did the same thing for the first Shuttle. And we worked right through it the first time. And I was not mentally prepared for that. I was expecting a week of it, you know. After we got through I looked around and I said, "Is that it?" I mean I just wasn't ready for that.

{laughter}

Launius: OK. OK, we'll, we'll break at this point. She's out of tape or almost out of tape and she'll change the tapes out, we'll…take a quick break.

Launius: OK, we're back.

Smith: OK.

Launius: I guess, on Apollo, one final question, are there any specific events, incidents, or recollections that you have about the program that you'd like to share with folks on the tape?

Smith: Well, gosh you know, there are so many. I mean, you remember the problems, you don't remember the good things and,…I remember the worst week I think I ever spent in my life from a fatigue standpoint. I worked at Huntsville on Monday, flew down here to the Cape on Monday evening, lost an hour of sleep doing that and had a meeting all day long, here on a launch readiness review, got on a plane that night, flew to LA. I spent two days in LA on Pacific Time. Then Friday flew back to Huntsville and worked Saturday at Huntsville back on Central Time. I wasn't worth a dern {laughter} for about three days after that. I mean, my energy level went absolutely out the bottom. I'd shifted time so much, the first time I think I ever went east and west and all and back in that short a period of time. That was typical Apollo work, OK.

Dethloff: Were you here for most of the launches, the Apollo launches?

Smith: No, I was not.

Dethloff: You were…

Smith: I did not attend that many launches. Usually supported them up there. In fact the first Saturn launch I saw was Apollo 14 and I was sitting in the firing room responsible for the vehicle. It's the first one I saw.

{laugher}

Snaples: What was the relation between Marshall and KSC at the time?

Smith: A very clean relationship. Keep in mind Debus and the launch vehicle people, not the spacecraft side, came out of Marshall. They were a directorate up there and most of them spent a lot of time and came down here for the launches, so we knew these people and so forth. So, had a very close relationship with to the launch vehicle side, to Debus, to, to all the launch team, to Hans Gruene was over the electrical area, Ike Rigell, Andy Pickett, those guys, many, many dealings with them. So when I became director at KSC I knew an awful lot of people from that relationship over the years, and of course as we got into Apollo and all the launch readiness reviews and everything I got to know the spacecraft side of the people, OK? The Ted Sasseens and all that and of course over the years, you know, I knew the . . . the working relationship with a lot of the key people at JSC. So it was again a fairly small group of people that you knew.

Launius: Let's talk a little bit about your Apollo and its wind down. Apollo 17, it flies in December of 1972. There of course is the Apollo-Soyuz Test Project in 1975, but that's the last time we fly Apollo…

Smith: That's right.

Launius: …hardware. And there probably, or I suspect there was, what was the feeling of the people at Marshall and, and so forth as the, as the Apollo program starts to wind down?

Smith: A lot of disappointment, particularly those of us associated with the launch vehicle itself. We felt with Saturn V we had a tremendous throw away capability and, and I remember spending quite a bit of time…we would've liked to build some more vehicles, obviously.

Launius: Sure.

Smith: It just wasn't in the cards. I remember sitting in a meeting down in Florida somewhere where we got all the industry people, the key managers of that and so forth to see what could we build some additional Saturn Vs for? And it was just too much money. We didn't have it. As a result, we had, what were there, three vehicles left over we didn't fly. And, and that was a shame. It would have been nice hardware to have to get the big hunks of Space Station up. OK.

Launius: Right.

Smith: All right. And that type of thing.

Snaples: To what extent was that a characteristic of Kennedy had to set this mission, you'd gotten all the money to fulfill the mission, but once you had fulfilled it the nation just lost interest very quickly.

Smith: It was a hard reality to deal with. I mean…success breeds complacency and you're torn. Take the Shuttle today. If it to be a success it should be basically routine, it should be just an accepted thing. Now, when you get it that way it loses public interest and so your support goes away, so you're damned if you do and you're damned if you don't type of thing. And it's a hard reality to deal with. I don't have the answer to it. I wish I did.

Launius: Obviously NASA goes into, and all the contractors associated with NASA go into, a downsizing mode.

Smith: Yes.

Launius: That was devastating and people have said we're still trying to recover from it.

Smith: Yep.

Launius: A lot of talent goes out the door and through retirement, through movement to industry, to just being axed and put on the street in some cases.

Smith: Well, I can remember, I was manager of the Saturn program from Apollo 14 through Skylab, not ASTP. We'd finished building the hardware, we were phasing out the contractors for budgetary reasons. You had to keep a certain residual engineering force there to handle problems. And how much can you phase down? There's no answer to that question, at least I haven't found one. And what you do would gradually bring it down and when you saw your reaction times to problems getting longer than they should be, you'd kind of got there, OK. You may even have to build back up a little bit. But, it's kind of tip toeing, kind of feeling your way down. Because if you cut it all at once, you know, you're going to lose that and, you're in deep trouble. And, of course, you take Saturn, take the launch vehicle for example. You had…several major contractors, you had Boeing building the first stage, you had Rockwell doing the second stage, you had McDonnell Douglass doing the third stage, you had IBM doing the instrument compartment, Rocketdyne doing the engines. So you had a very massive engineering effort there. The engines were probably the easiest to handle because you were constantly static firing those things and all and so there was a little better situation there. So it was a tough downsize to work, a lot harder than the upsize.

Snaples: Yeah. Oh yeah.

Launius: Yeah, I'm sure of that. And I've heard this from other sources as well, but in early 1977, Jim Fletcher, NASA Administrator, sent a letter to his proposed successor, Bob Frosch, in which he outlines what he calls issues and opportunities and challenges at NASA. And there's a whole laundry list of things that he talks about, but one of them he talks about is closing down the Marshall Center.

Smith: Oh yes.

Launius: Was there a sense there that Marshall was on the block?

Smith: Yes. And that went through several different cycles. That was probably the most serious one that took place. In my opinion, budget wise, NASA still has too many centers. There's a lot of infrastructure to support.

Launius: Right.

Smith: And Marshall was a candidate…and…there was a lot of concern.

Launius: OK. NASA decides to move forward with the Space Shuttle and…this is really a gutsy thing in lots of ways, I mean, our first reusable vehicle. Were you involved

in the discussions about how you move from Apollo hardware to an entirely new type of launch system?

Smith: Not that much, because…basically at Headquarters and both the centers and so forth and KSC as well we had set up dedicated teams basically already working on Shuttle. I was busy managing the residual of Saturn. Didn't have a heck of a lot of time to fool with that. I had enough problems in my basket as it was. And, you know, we obviously participated in meetings and knew what was going on, but I wasn't that heavily involved in that.

Launius: OK. Well I see here that you spent some time up at Headquarters. Can you tell me a little bit about that? How was that in relationship to what you've been used to?

Smith: Like being on a funny farm.

{laughter}

Launius: OK.

Smith: Friday night you'd be tired as hell because you'd been fighting your way out of a paperbag all week and hadn't accomplished anything. OK.

{laughter}

Launius: Nothing's changed.

{laughter}

Smith: That was an interesting assignment. Earlier I had been approached by Dale Myers, who's still the associate administrator, to come up and be the manager of Shuttle. I had a couple of conditions that I felt were requirements for Headquarters to do a decent job of that. And I said I'd only come under these conditions and basically I wanted the system engineering responsibility reporting to Headquarters. Didn't want it necessarily at Headquarters but I wanted it reporting directly to Headquarters. He didn't agree with that. And I didn't get that job, thank goodness. Then…John Yardley approached me about coming up and being his deputy. It was a one-year assignment, and, so I did it and it was a great year's experience. I wouldn't want to spend all my life in that area, but I learned an awful lot during that year.

Launius: OK. From there you came back, you came down here…

Smith: Yeah.

Launius: …as Center Director.

Smith: Yeah.

Launius: What did you encounter when you arrived. Obviously we hadn't flown with people for a few years when you arrived, but you were bringing Shuttle on line.

Smith: Yeah, well let's talk about how I got here…

Launius: OK.

Smith: …that was kind of an interesting arena. While I was in Headquarters Skylab decided it was going to give up its life. And, about the same time we were running into some of the first major budget problems with Shuttle. And we were going to have a big meeting in Houston laying out all the problems and responses and options and so forth. I went down two or three days ahead of time to help lay out this picture to give to Yardley and the Administrator and so forth. And when they showed up that morning Al Lovelace, who was Deputy Administrator, called me over to the side and says, "Dick", he said, "This Skylab reentry is getting an awful lot of interest and we've decided that we need to put a more senior person overseeing that and we've decided that's you." I said, "What does that mean?" He said, "We don't know, but it's your job".

{laughter}

Smith: And so that was, that was the extent of the instructions I got. So we took off trying to manage the reentry of Skylab and I spent, for several weeks there, probably…I'd say average of 20 to 25 maybe 30 hours a week talking to the press.

Launius: Really?

Smith: Every country, every network, talk radio shows, the whole ball of wax. You know, everybody was interested in Skylab's demise. And, as we worked this, we had to interface with State Department, the White House, the FEMA people which was a brand new organization at that time. So I got thrown into a lot of other agencies that I would not normally have been exposed to. The Canadian government, you know, the Russian satellite had come down and put some radioisotopes up there and they were concerned so I went up and spent a day with the Canadians and so forth and so on. The interesting thing about it was, it was not a typical problem for Washington to deal with. We didn't know exactly when it was coming down, but it was coming down soon. And, if you were going to participate and had any input you had to do it now, you couldn't procrastinate and wait on the thing. And that was a little far into a lot of the Washington things and as a result a lot of people just flat out got out of our way and we did what we wanted to. We had come up with a way that we know we've got it reactivated, we used all the, just about all the cold gas, we put it in a gravity gradient stabilized mode. We had enough gas to tumble it, which would decrease its drag. And if it looked like it was coming down over a populated area we could tumble it and [fly a little longer]. So we came up with a scheme of plotting the population onto the ground

tracking. If we thought by tumbling it and increasing the, roughly half an orbit, its lifetime that would decrease the probability of hitting someone regardless of whom, we ought do it. And we had to sell the State Department on this. Warren Christopher was number 2 in State Department at that time, so went over and briefed him one day and he said, "You know, of course, my staff thinks we shouldn't agree with this." And I said, "Yeah, but we don't agree with them." And so I pitched the story to him, and he said, "You make a good case." He said "I'd like to think about it tonight and we'll give you a call tomorrow, to see whether or not we agree with you." They called the next day and said, "Go ahead with it," and we did, and it came down. An interesting thing was it was going to track up over Canada and northern United States and we tumbled it and we thought when it got to the Ascension Island Station that it would be broken up. There's typical Marshall, they had over-designed it.

{laughter}

Smith: And, it was just beeping like a son-of-a-gun as it went by Ascension Island, OK.

{laughter}

Smith: So we got to…southern Indian Ocean and across Australia. Killed one jack rabbit, I think, or something like that. But, and we'd been up all night and everything, seeing this thing come down and everything and Al Lovelace that night

before I left, he said, “Dick,” he said, “I need to talk to you about something,” he said, “You need to sleep late in the morning,” says, “but when you get to the office give me a call.” He said, “I want to talk to you.” And what he wanted to talk about was being the director of KSC. This was right before I was supposed to come back. My year was up. So I had all plans to go back to Marshall and, and so as it was I spent two weeks in Huntsville on the way down here and I became director in August or first of September of 1979. And we were in the middle of getting, rebuilding Columbia, to get it ready to fly.

Snaples: I was curious to, to go back to the State Department and Warren Christopher. They didn’t want you to tumble it for an extra half orbit, just let it come down wherever it came down?

Smith: Well, the theory that they had was just let Mother Nature take its course, but we had in the mean time reactivated the thing and already perturbed it. So if we had never done anything that would have been, you know…the logic.

Snaples: So that way they could swear up and down they had nothing to do with it, but the minute you did something, if it hit something…

Smith: That was the theory of their staff, OK. And it didn’t, it really didn’t make good sense because we’d already dickered with it and we could do little bit to help it. And the logic was that by tumbling it, even in the worse case of it flying much longer or anything else that we still decrease the probability of…of…

Snaples: Yeah, I just couldn't understand why the State Department objected to that concept.

Smith: Well, they didn't have the greatest people basically in my opinion.

{laughter}

Smith: OK, so. Maybe that's because they didn't agree with us, maybe that's why I say that. OK.

Launius: I've seen a couple of documents done from the early seventies and I don't know if this, if this is a realistic thing or not. But maybe you could answer it, in which they suggested that when we get Shuttle on-line we can go up to Skylab, reactivate it and reboost it and…

Smith: Yeah.

Launius: That was a serious plan.

Smith: Yeah. That was … that was an afterthought type thing.

Launius: OK.

Smith: OK. And, because we were getting in solar max period and so forth so the drag was increasing on the Skylab and so forth, but Shuttle was slipping and then the times just didn't work out.

Launius: Right, right.

Smith: But keep in mind Skylab was a damaged set of hardware. We'd lost one solar array…

Launius: Right.

Smith: We had not boosted it as high as we wanted to when we left it on the last manned mission, because we did not want to boost it using the main engine of the command module. We were afraid of the thrust and afraid that if that wing collapsed we'd put the crew in jeopardy and they couldn't, they couldn't detach from the thing. So we had boosted slightly with the maneuvering jets and not the main engine and, and so it was, it was a crippled situation from the word go.

Dethloff: When you were invited to come to KSC were you given any special mission, assignment, task that was in mind…

Smith: One clear thing, get that damn Shuttle off the ground safely. OK, I mean, and that wasn't even told to me.

Dethloff: Return to flight.

Smith: No, not return to flight, FLY.

{laughter}

Dethloff: Fly. Period.

Smith: And I don't even think that was mentioned in the discussion, OK?

Dethloff: OK. Fly it. OK.

Launius: But it was very clear what your marching orders were.

Smith: Yeah, without ever being said, OK? So that was the situation.

Launius: OK. What was the situation when you arrived? Obviously, they were trying to work it and bring it on line. You got guys like George Page, I think, who were down here working Shuttle at that point.

Smith: Well, George was launch director and everything and had been here for some time and … really to my knowledge did not make any significant changes to the team working the thing. As time went on we, you know the evolution of moving people

and things like that took place but no dedication. You'd have to talk to somebody else why they wanted to change center directors and all at the time. I think maybe mainly just to get a change in emphasis and so forth. So…it was a tough period of time to get that…because, you know, the key, the main problem, not the only problem but the main problem, was those dern tiles. And there had not been enough research done into that and as we were putting them on and trying to get it we found out one, they weren't adhering good enough. We had to come up with a way to do it. So there was a lot of development work during that phase of time. I think we took one step forward and two steps backwards for several months there before we got it knocked down to how we got through with it. I remember the first time we powered up the Orbiter. It took us a week to get it powered up and then we left it on, left it powered up for weeks because we took so long to get it powered up. Now its almost like throwing a switch, you know, to get it powered up, but each step was a major learning curve. OK.

Launius: Henry, did you have a question?

Dethloff: I'll pass.

{laughter}

Launius: I thought, I thought I saw you over there…

Dethloff: I did. I had one and it passed.

Launius: What was the morale of the folks down here when you, when you arrived? Were they excited about bringing on this new system? Were they kind of you know less, less excited? How would you characterize it?

Smith: Oh I think the excitement was there. The morale was different. It wasn't like Apollo.

Launius: Yeah.

Smith: I mean being the national goal, the motivation of people at that time during Apollo was never a problem. It wasn't the same situation during Shuttle … what was happening here was kind of a reflection of what was happening nationally. I mean it wasn't a unique problem to this location. I would say if anything, the morale here was higher than most places. You had the hardware. You were working on it. You had finite problems you were working with. The workers were pretty well insulated from the politics going on. And, I never found a lack of dedication of people.

Dethloff: The culture, I think that was kind of where I was going too. The culture changed much here in terms of enthusiasm, dedication, hands-on. You know you were talking about responsibility and the can do attitude. Had the world changed?

Smith: It had changed some, but the culture here I would say had changed the least.

Dethloff: Less. OK.

Smith: OK. KSC is an extremely unique situation that it's got a lot of pluses going for it. If you think about an organization as a country or whatever, what brings you together is a crisis.

Launius: Yeah.

Smith: Now, getting ready in a launch is a built-in crisis. And, if you watch the people as you get closer to a launch, KSC, any organization and all the various directors, there's internal bickering and squabbles going all the time. But as you get close to a launch those get dropped by the wayside and the job at hand is get that dern thing launched and get on with it. So that has a way of breaking down a lot of the problems and building a team, that is kind of, in KSC standing, is scheduled routinely you have these crises. I can't think of any other organization that quite has that same thing. Not quite true at JSC, not quite true at Marshall or Headquarters. Parts of it are involved in that, but not as an organization. So KSC is very fortunate in that and very unique in that situation.

Launius: You mentioned the tiles as a major challenge that you had to wrestle with. Were there other particular problems or issues that you had to deal with to make that first flight in 1981.

Smith: Well, keep in mind everything was a first.

Launius: Well, I understand.

Smith: OK, and we were learning. And so. . . everything we did the first time was a problem. It was a learning curve. And, it was just a constant fight through each and every one of those things. And … lot's of fun…

Launius: Right.

Smith: Lot's of people. I mean, it kept people busy but I never had any problem with the dedication of the people. One thing that was rather interesting, when we got the tiles down here, they brought a crew of people in from Palmdale…a bunch of West Coast flakes…to put it bluntly.

{laughter}

Smith: I mean there were some of them that were pretty far out, OK. Over the next few months we basically got rid of those and sent them back to the West Coast and went out and hired a bunch of young technicians. They're basic…in all practical purposes their first real jobs. And they were working under a demanding set of requirements under intense supervision and so forth. And it turned out to be best damned group of people you'd ever seen and those young people really benefited being

thrown into that environment. And, I think most of them have done well. Some of them are still, a lot of them are still here doing some of the same thing. A lot of them have up moved on up into engineering degrees and so forth. So they were a fortunate group of guys that got thrown into that.

Launius: You launched in April of 1981.

Smith: Many years ago.

{laughter}

Launius: Yeah. 20 years ago. The first Orbiter into orbit and John Young, Bob Crippen were aboard. Where were you and what were your thoughts on that particular day?

Smith: Thank God we got rid of them. OK.

{laughter}

Smith: Never wanted to get rid of anything any worse in my life. Then of course, the only problem, that dern thing came back and got to do it all over again. Clearly a lot of apprehension. And then but an hour after launch we found some tile on the launch pad. And we said, “Oh my God, you know, are we going to burn a hole in the bottom of

that thing when it comes back in? Are we going to lose the crew on landing?" And, we really didn't know. We didn't know where they'd come from. I supposed we identified a couple of them, but it was really touch and go as to … let's see we were some point uptight on it. And it's, and it's an interesting thing. I mean you go along. This is true of any launch in my opinion. But you go through all this preparation and getting up there and building up to the climax and the team to get it launched, and then you launch it, and then finally it's recovered and then you go through a period of depression. It's over, what am I going to do now? You've got to start that cycle all over again and I think most people experience that a few days of what now type thing after a successful mission.

Launius: Yeah, I can recall the landing where I watched it with Walter Cronkite who, when he was still the anchor at CBS…

Smith: Yeah.

Launius: …speaking with great concern about those Shuttle tiles.

Smith: Well, I, we were out there at the landing and we were somewhat puckered for that. There's no question about it. Of course by the time we saw it we knew, knew nothing had been burnt through…

Launius: Right.

Smith: …and, or at least not critical.

Dethloff: With the successful launch what did you experience here at KSC a substantial, lets say reawakening in public contact, in public excitement? Was the pace of things changing?

Smith: Well, …the pace of things changed really coming up to the launch.

Dethloff: OK.

Smith: You had a tremendous number of visitors.

Dethloff: OK, so the excitement was being…

Smith: …international visitors and so forth, VIPs coming through was a damn near daily occurrence type thing, and a lot of interest, and you had that excitement going on with the thing. That lasted really throughout my tenure here. If there was a VIP in the area they wanted to come out and see the Shuttle and so forth and so on and got to meet a tremendous number of very interesting people.

Dethloff: What was that, did the level ever go back to the Apollo level? Of course you're in a different context, I guess, at KSC.

Smith: It didn't kind of last like Apollo. It seems like it dropped off with Shuttle quicker than it did with Apollo. OK. At least, and again I'm coming from a different environment at this period of time, and from what I understood it kind of did.

Launius: Shuttle was going, I mean people talked about it. It's going to be the space truck. We're going to fly this thing a lot. Some of the projections were talking about 50 flights a year which I'm not sure anybody believed, but at this time, they're still talking about 15, perhaps 20 flights a year. What were you and your folks thinking about how you were going to make that happen or did you not think it was ever going to happen.

Smith: Well, during the latter part of the Shuttle development, we really ran into the first real budget problems. KSC proposed many changes, or opposed certain changes, purely from an operability standpoint. It was going to cause turnaround cycles and all to be more complex and take more time and manpower and so forth. To a large extent that fell on deaf ears. It fell on deaf ears primarily because of budget, not of concern. I remember KSC making a presentation while I was in Washington about how long it was going to take to recycle the thing. It really wasn't listened to that much, given the, purely about budget. I remember Yardley making a statement saying, "Son you haven't processed the first one yet, so I don't know how much faith to put in this thing." But he was under tremendous pressure budget wise to get the thing going on and I don't think he'd made any other decision than what he made at the time. But, but

as a result of that the Shuttle is a more complex recycle problem than it could have been. OK?

Launius: OK. There are 20, 24 flights in the first few years with a lot more activity than we ever saw during Apollo or any period before. The KSC workforce had to rise to that challenge. How did you go about motivating, did you have to motivate them?

Smith: Motivation wasn't a problem. Working with the hardware. Motivation is really not a problem there. OK? At the same time we were under pressure for two things, one, process it quicker and faster, two, do it for less money. And, as a result of the budgetary constraints and all like that, some very major changes in operations at KSC were done. We went away from the previous mode of contracting and to three major consolidated contracts.

Launius: OK, yeah.

Smith: Which was a real cultural change from the way we here at KSC did business. And that was a very dynamic period of making those changes. And it was a change that was not well received at JSC and Marshall. We kind of did it and somewhat, you might say, in spite of them. And I think it's worked out well. And, because we had an awful lot of duplication of efforts we changed the way that KSC worked with the contractors which was a cultural change. And that did not come easy.

It was having to reeducate the workforce. It was resented by, resisted by, a lot of people and a lot of people will still tell you it was a stupid thing to do.

Dethloff: So it puts the engineer more in a management role as opposed to hands-on engineering.

Smith: That's right. I remember, the ladies here maybe know Ted Sasseen. . . No, no it wasn't Ted Sasseen, it was…I can't think of the guy's name, doesn't make any difference. A great cartoonist and all and he would sit at a meeting sometime drawing a cartoon and he would capture the essence of what was going on and he, if you got one of his cartoons.

{background voice} _____

Smith: Huh?

{background voice} Ernie ____

Smith: No, not Ernie…was kind of the staff guy for Page. Ended up being a Shuttle manager for us…he and his wife both worked here. Can't think of his name right now. Anyway.

{background voice} Was it Honeycutt?

Smith: No, not Honeycutt. Anyway he drew a cartoon one day of a complex gear train, of all the contracts that had to work together. And in between all those gears was KSC. And the real question was whether we were oil or sand.

{laughter}

Dethloff: That's clever, that's good.

Smith: And, because the way we were operating and the way we had operated during Apollo and all is KSC was literally in control of those things. And, as a result you could not hold a contractor responsible for anything, because you were in the approval process of every step along the way. And schedules, money, and everything else. So it was a significant change.

Dethloff: And a cost savings.

Smith: Quite a bit of cost savings. The real question was historically the nation had only used the developer to operate the flight hardware. Could someone else do it? And would someone else be willing to do it? And those were some unanswered questions. We laid out the strategy of what we wanted to do and… I called a meeting of representatives from all the major contractors including United Airlines and briefed them up on the fourth floor of our strategy of what we wanted to do and would you be interested in bidding on such a thing. I said at the end of the meeting it was a rather

cool reception to the idea. It was different. It was strange. It was odd. I said, "OK, look." I said, "Go home, think about it. I want to meet again in two weeks. And, let's see what you think then." And the one thing I was proposing is, "Hey, you could contract with anybody to, if you'd paid them to study this thing," and I said, "I don't want to pay you to do this." If you're interested I want you to come in and bring your own people and look at it at your expense and decide what you want to do." That was strange. Was not the way you normally did things. And, in two weeks they came back and they were relatively warm to the idea. They hadn't got to the point of yes yet. So, at that time we invited them to make proposals of teams to come in and we selected several teams of people to study. And out of that was a decision that, yes, it could be done. People were willing to bid. And we could manage the risk. And the risk turned out to be not safety but schedule.

Launius: Oh, OK.

Smith: If you'd had a problem you were going to end up maybe slipping short-term schedules, not a long-term schedules, short-term schedules. So that we really boiled down to that was the case. And, so, then we set about inviting people in to really survey it. Had to be pretty blunt with the existing contractors that you are going to cooperate with this activity whether you like it or not. And if you don't cooperate your fee will suffer accordingly. OK? So it was a difficult time. Had people like Chris Kraft at JSC that was against it. In fact we ended up with two bids, we end up with a bid of a conglomerate of the major aerospace hardware developers and Lockheed. I

understand at a meeting with the Lockheed president and all on this thing, would KSC have the guts, or NASA have the guts, to come out with, to really come out with this RFP. And it boiled down in their mind, their evaluation, were Dick Smith and Andy Pickett strong enough to overcome Chris Kraft.

{laughter}

Smith: This is what, this is what one of the guys said…it was a meeting of six people, he was one of the guys in the meeting. And, if he was would we bid on it? And they did bid and they ended up winning. Because the team that made up of existing contractors were not willing to belly-up to changing the roles that they had presently. And they came in with an awfully complex proposal. And the problem there was they used the people involved to make the proposal. And when you're proposing to do things differently you can not use that same team of people to do it. I don't care who you are, you can't do it, because that's a conflict of interest. For example in the other part of the contract we did was the Base Operating Contract where we consolidated a lot of that. And we were going, reviewing, and that's when EG&G won that one, looking over the proposals, we had several proposals there. I remember one computer complex that several of the existing contractors proposed to using. And in our rearrangement of everything that complex was no longer available to BOC, but every guy said that and several other things. And I went back personally and looked at the RFP. Were we clear in what it was and the answer was yes, we were, but they just assumed we didn't know what we were talking about and proposed, what was being

done now. And so that's the problem with the existing guys doing the thing. And, like I said, we were changing the culture of not only NASA but the contractors down here and that was a tough period.

Launius: We have to talk about Challenger a little bit. Where were you on that tragic day and what were…

Smith: I was sitting in the firing room looking out the window and probably made the most stupid statement I've ever made in my life. I turned over to…who was launch director at that time? It was. . .

Background voice: _____

Smith: No, George was my deputy.

Snaples: Gene Smith.

Smith: No, no. He's retired now.

Background voice: _____?

Smith: No, no.

Background voice: Sieck?

Smith: Sieck, Bob. I turned over to Bob and said "What happened?" It was obvious what happened. You know, you just, you were not willing to accept it. On that.

Launius: What was, what process did you all go into to try to determine what had happened and, and explain that I guess to the public and so forth.

Smith: Do you really want me to go into that?

{laughter}

Launius: As much as you want to. No more than you want to.

Smith: {audible sigh}. Biggest screw ups in NASA's history in my opinion. At this time Jim Beggs is under the…

Launius: Right.

Smith: …questionable indictment.

Launius: Right.

Smith: And we had, what was the guy's name that was…

Launius: Bill Graham.

Smith: Yeah, Bill Graham. Beggs had been in the Headquarters the day of the accident. He had written down a list of things for, suggestions to Graham for things that should be done and Graham tore it up and threw it in the garbage can. NASA's procedures in the past had been that you immediately form an independent team. We did not do that. In fact nothing was being done from organizing the thing. The lowest day in my career was the Saturday that we had the memorial service for the crew here at KSC. And the high point of that day was the memorial service. We came back, several couples from the memorial service in my office having some coffee and snacks and so forth. And we were talking to Graham in Washington about, he was wanting to release certain photographs and information, things like that. And we kept saying, "Look, we don't have a plan, we don't…if we start doing this we're flying by night and we're going to get all screwed up." Do it anyway. That was the one-day I almost resigned on the spot. Ok? Kept talking to him about when are we going to get organized to do this investigation properly. We're working on it. What he was working on was with the White House to come up with the…

Launius: Rogers Commission.

Smith: Rogers Commission. And NASA never did establish an internal independent group. And one of the first early things that the Rogers Commission recommended that the center director's and all be taken out of the loop in the investigation. And the press asked me what I thought about that and I said, "By God. It's about time. I've been saying this since the day it happened." You know, we need an independent group to do this thing. We can't be investigating ourselves. It's been stupid to stay the way we have this long. As a result of all that NASA lost total control of the activity…

Launius: Right.

Smith: …and it set the agency back a long way. Now had we moved out and created an independent group we'd of probably still have the Rogers Commission, but I think at that time it would have been an oversight as to what we were doing as opposed to doing it and it 'd have been a different story. My respect for the lack of leadership in Washington is at that period of time is somewhat low.

Launius: Um-huh. I understand that.

Smith: OK.

Launius: You also have said, I think on several occasions, that you thought the media were like a bunch of sharks.

Smith: Yeah.

Launius: I don't know that you used that term, but…

Smith: I probably did and a few others, OK.

{laughter}

Smith: As a result of that period of time I still don't take a newspaper.

Launius: OK.

Smith: Because what I knew about was so misquoted I became a cynic and if I don't, if what I know about is so wrong why should I believe any damn thing else in the newspaper. Ok?

Snaples: As part of that I wanted to ask maybe before we even got into Challenger, maybe I should of spoke up. In those first 20, 25 missions there had been these series of sort of civilians going along, a couple of US congressmen, I think the Saudi Arabian prince flew, before and then, and of course the first teacher in space. Had you agreed with that program?

Smith: Absolutely, and I think NASA should be doing it today.

Snaples: OK.

Smith: And this crap about they didn't know the danger of it. Bull. I like what Jake Garn said. He said, "You know, you don't have to be a fool or have to be an idiot to realize that the ground crew, the closest one is to launch is, is three miles away that there's some risk involved in this thing."

{laughter}

Smith: You know, I mean, it doesn't take a very smart person to realize that.

Snaples: Well, I was curious because doesn't that increase the media attention.

Smith: Sure it does and NASA was obviously very upset with this guy that flew on Space Station.

Snaples: Right.

Smith: I'm upset the way it happened, because I think NASA should be taking the lead on that thing. And that's probably one reason that Headquarters doesn't want Buzz to have a pass to get in there, OK?

Launius: Yep.

{laughter}

Smith: All right. So, because he thinks that we should be flying people. All right.

Snaples: Do you think it would have been different had that been an all NASA crew, rather than having Christa McAuliffe on it?

Launius: Ron Jarvis was also not a NASA person.

Snaples: Well, yeah…

Smith: But he was more of an astronaut than, than Christa was.

Launius: That's true.

Snaples: I'm just wondering, had that been two Navy, two Air Force, and a NASA scientist…

Smith: That would probably have been a totally somewhat different play…from the press because you thought from the press that she was the only person on the flight a lot of times. OK?

Snaples: And I would agree with that assessment.

Smith: And that ticked me off a lot of times on the thing. And, but I think we should have flown within the first ten missions afterwards the backup teacher. I think the agency has made a mistake.

Snaples: Is that maybe one of the lessons the agency mislearned from Challenger, this hesitancy to put those civilians up on the…

Smith: In my opinion, yes. OK.

Snaples: OK.

Smith: In my opinion, yes. This whole Challenger cycle made the agency too damn conservative in my opinion. OK? When I left KSC I went into private industry and that didn't work out for several reasons, but we don't need to go into that. I was contacted by Dale Myers, he was back with Jim Fletcher had come in and Dale was back in. Dale called me and asked me to come back to NASA as the number three person in the agency. Financially it wasn't very attractive. And I kind of used that as an excuse to not do it, but if I'm honest with myself, that was an excuse, it wasn't a reason. The real reason is that…for political reasons and so forth the agency was so conservative I don't think I could have tolerated it. OK?

Snaples: Is that…

Smith: And I really wasn't willing to put up with, and I gave Dale a couple of conditions that I wanted to have before I came back and they weren't willing. And this was the second time I had turned them down on a job on that, but I was honored by that happening and all, but it's…you don't want to be devil at risk, but you can be too damn conservative. OK. And I think the agency needs to fight that more.

Launius: OK.

Dethloff: Another product of the Challenger was a decision to eliminate commercial payloads ultimately I think, you know, there were a lot of things going on. What about commercial payloads on the Shuttle and … you know a greater level of activity, a greater spectrum, people, and all that? Could you comment on that?

Smith: Well again I think that's stupid, OK? One of the interesting things while I was in Washington was I served on a committee looking at how we dealt with commercial guys getting in and there was a fear in Washington that somebody would get rich off of this. OK?

Dethloff: Was that the plan?

Smith: Well that was a fear, that was a fear. And I say, "I want the person, the guy to get filthy rich"…And I say "Look we have to beat them off with a stick," and I say, "That's what we're after." You know, to make this routine. I say, "I don't understand you

guys. I thought you were for free enterprise. You know, you're stupid." So I've been a rebel several times. OK.

{laughter}

Snaples: And a couple of general questions if we can real quick.

Smith: I think she's about out of tape. Are you about out?

Launius: Yeah, just about.

Snaples: How would you appraise NASA's development since you left?

Smith: Well again I think the conservatism is there and, of course, I have to admit I'm not familiar with the politics. And the thing that is disappointing is that NASA now is a much more political agency than it was. We were really apolitical during Apollo. At least down in the bowels of the organization. OK? We had a mandate to get the job done and politics didn't really enter into the picture. So the outside culture has changed a lot.

Launius: Final thought. If you had any advice to a young aerospace engineer who was either working for NASA or wanted to work for NASA, what would it be?

Smith: This is probably a result of my personal experience and most professional advisors would totally disagree with what I'm about to say. Is, find a job you're interested in. Don't worry about what you're going to do next. Do the best damn job you can at that and the future will take of itself. That's my personal experience. OK. I interviewed for the first job and the rest of them came to me. OK.

Launius: Um-huh. You bet. I think that's probably a good place to leave it. Let's go from there. Thank you so much sir. I appreciate it.

Smith: Glad to do it.

Launius: It's a pleasure to talk to you.